

Improved Management of Jackfruit for Higher Productivity and Income

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This publication is the joint effort of

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The Scientists of the Bangladesh Agricultural Research Institute, upon receipt of information about an unknown malady that limited jackfruit production in the hilly areas during 2007 investigated the cause and identified that gummosis disease is one of the major constraints and proposed some research activities through a PIU- BARC funded SPGR.

The sub-project was aimed at,

- Identification and documentation of the major insect pests and diseases, nutritional and water deficiencies for jackfruit trees;
- Development of Integrated Management packages for improvement of jackfruit production
- Awareness building and Training of farmers, extension peoples, NGO personnel's

Approach and Methodology



Symptoms due to gummosis infection on trunk of Jackfruit

Gummosis Disease

A survey was conducted during 2010-11 in six districts namely Khagrachari, Rangamati, Brahmanbaria, Narsingdi, Tangail and Gazipur and the major problems of jackfruits cultivation were identified. The prime constraint identified was gummosis disease caused by *Phomopsis artocarpii* that destroy the quality of wood of jackfruit trunk, shortened the life span of the plants and finally decreases the overall yield. About 45-87% of the surveyed jackfruit plants were found to be infected by gummosis and most of the plants were severely damaged.

Fruit and trunk borer

The insect that damaged the fruit of jackfruit especially in the hilly areas was found to be fruit borer (*Diaphonia caesalis*). About 24.5% fruits were found to be infested by the borer. The larvae infested young fruits and causing damage. The trunk borer (*Apriona rugicollis*) infestation though not so high (about 10%), but the infested plants were dying finally.



Adult moth and grub of fruit borer; trunk borer infected plants; grub and beetle of trunk borer.

Soil Nutrition and Irrigation

In the surveyed areas of six district farmers are not aware of soil nutritional and irrigation aspects. They neither fertilize their plants nor irrigate. On analysis of the soils of the areas it was found that soils are mostly acidic and deficient in micronutrients such as Boron, Zinc etc.

Management of Gummosis

As gummosis was detected to be the major disease impending the successful jackfruit production, two years endeavor to manage it was fruitful. The infection portion of the trunk was chiseled properly so that infected tissues are not remained. The scoped area treated with Bordeaux Paste (a Mixer of Lime and Copper sulphate dissolved in 10 times water for overnight separately) or with Coal tar. The treatment was given twice at 30 days interval before and after rainy season. Unique success was observed in every location and about 80-90% of the infected area recovered. Cambium layer started to cover the scoped areas in course of time.



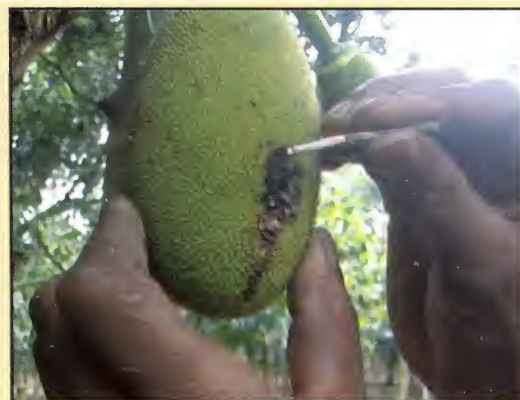
Management of gummosis with Bordeaux paste and coal tar after scoping



Cambium layer initiation and development in course of time

Management of fruit borer

Fruit borer in the jackfruit orchards was successfully controlled by the combined treatment of bagging with clothes of 15 days young fruits as well as hand picking of young grubs during fruit initiation. This treatment could be controlled fruit borer completely.



Borer infested fruit, fruit bagging and hand picking of insect larvae

Grafting activity is progressing :

Scion of selected superior germplasm of jackfruit grafted on Chapalish or jackfruit root stock with good success.



Scion of superior germplasm grafted on Chapalish or jackfruit root stock.

Fertilization and irrigation :



Fertilization and irrigation is progressing following ring method

Training of the Extension Workers, Farmers and Publication

For sensitization, awareness building and motivation, several training were arranged for the farmers and the extension personnel of the Department of Agriculture Extension (DAE) to disseminate effective and fruitful technologies developed under this sub-project.



Farmers' Training in progress



Training manual and leaflets for farmers and Extension workers

The manual for farmers' training developed for the purpose with coloured photographs for better understanding of disease, insect, grafting technology for superior germplasm and finally fertilization and irrigation etc. along with the two leaflets published were used and widely distributed. Two scientific articles are also under process for publication in the journal.

Success story:

Md. Abdul Malek, Balipara, Ramgarh, Khagrachari, a owner of Jackfruit orchard where the project activities were conducted from the beginning of the sub-project. In a statement made by him in Boishakhi TV he agreed that all the activities performed by BARI scientists accelerated increased the yield of Jackfruit by 35-50% in his orchard. This helped him to earn Tk.70,000-1,00,000 extra compared to usual profit. The activities were Disease and insect management; fertilization and irrigation. Finally he sat up an orchard with graft of BARI Kanthal-2. He hoped that in future he will be able to maintain his orchard properly through improved techniques learnt. Mr. Malek hopes that farmers' will be benefited to control the maladies as the effective technologies are discovered and Jackfruit production per unit area will be increased.



Mr. Abdul Malek, a jackfruit farmer at Ramgarh is showing the recovery of gummosis infected tree to Project Evaluator

Lesson learned:

The main constraint is to convince the farmers about the technology and their role to maintain jackfruit orchard. They are very much eager to improve in order to get monitory benefit. Since, traditional practice is just to leave the orchard as it is, the farmers were observed to be reluctant to adopt appropriate management practices. Much more efforts needed.

(Revised...)